Tampa Bay Nitrogen TMDL

Basin Approach

- **Divided bay into four segments**

  Old Tampa Bay, Hillsborough Bay, Middle Tampa Bay, Lower Tampa Bay

Model

- **Developed empirical model relating TN levels to Chlorophyll a concentrations, which were in turn related to light and seagrass**
- **Also used WASP which supported empirical model**

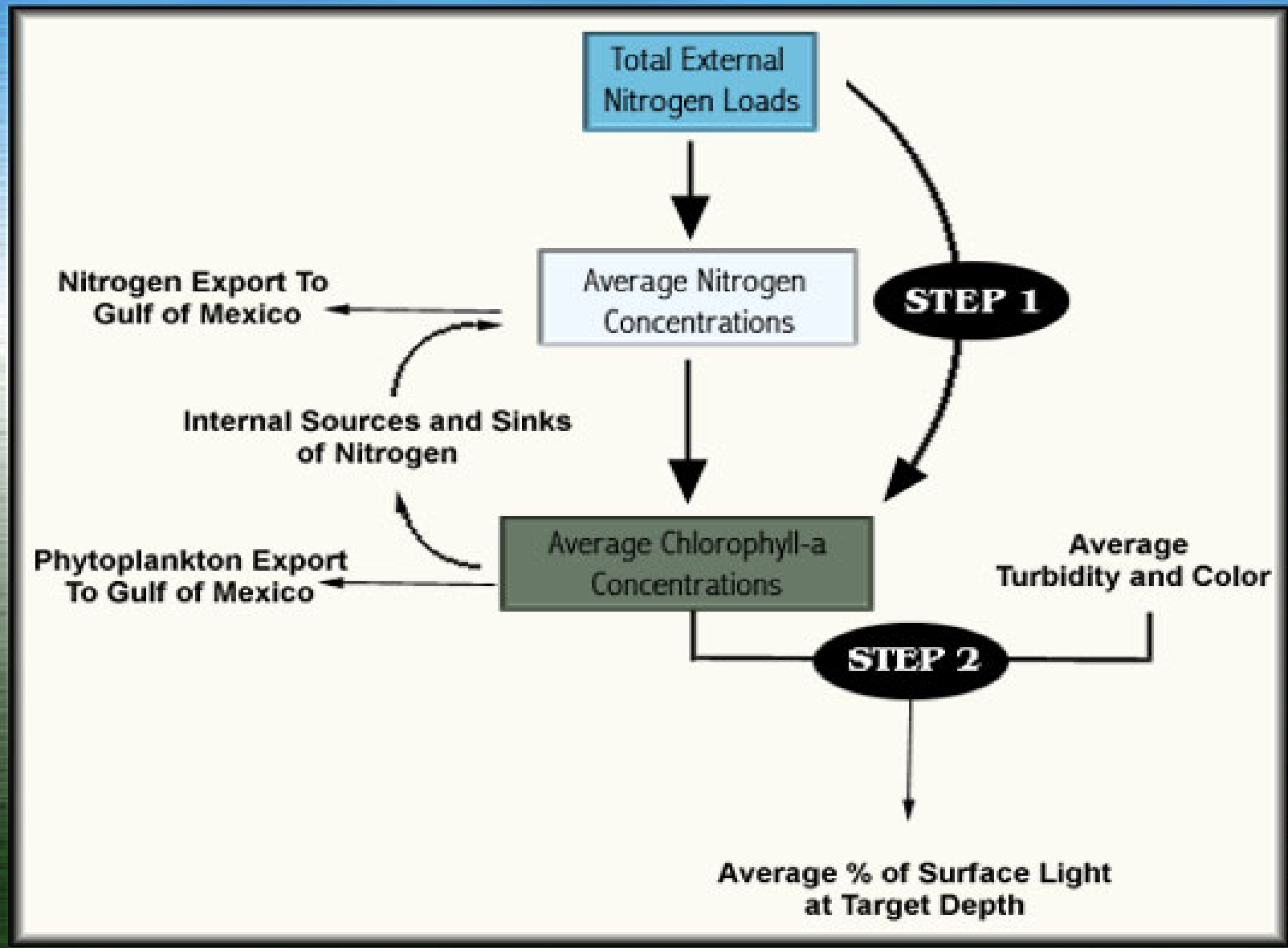
Tampa Bay Segments Total Maximum Daily Loads for Nitrogen (1992 –1994 Averages)

Source	Old Tampa Bay		Hillsborough Bay		Middle Tampa Bay		Lower Tampa Bay	
	tons/year	lbs./day	tons/year	lbs./day	tons/year	lbs./day	tons/year	lbs./day
Atmospheric Deposition	227	1244	115	630	306	1677	288	1578
Point Sources	85	466	300	1644	78	427	1	5
Material Losses	0	0	233	1277	0	0	24	132
Nonpoint Sources	174	953	596	3266	415	2274	36	197
Groundwater and Springs	0	0	207	1134	0	0	0	0
TOTAL	486	2663	1451	7951	799	4378	349	1912

Reasonable Assurance Information

- Description of Impaired Water
- Description of Water Quality or Aquatic Ecological Goals
- Description of existing or proposed management actions
- Procedures for monitoring and reporting results to demonstrate progress
- Description of proposed corrective actions

Average Nutrient Load, Water Quality, and Light Environment Conditions Modeling Paradigm



Tampa Bay Nitrogen Management Consortium

- Public Participants

  Cities - St. Petersburg, Tampa, Clearwater

  Counties - Hillsborough, Pinellas, Manatee

  USEPA

  Florida DEP

  Southwest FL Water Management District

Tampa Bay Nitrogen Management Consortium

- Private Participants

  FL Phosphate Council, Cargill Fertilizer, IMC Phosphate, CF Industries, Florida Power and Light, Tampa Electric Company, Eastern Terminals, Pakhoad Dry Bulk Terminal, CSX Transportation, Florida Strawberry Growers Assoc., Manatee County Extension Service

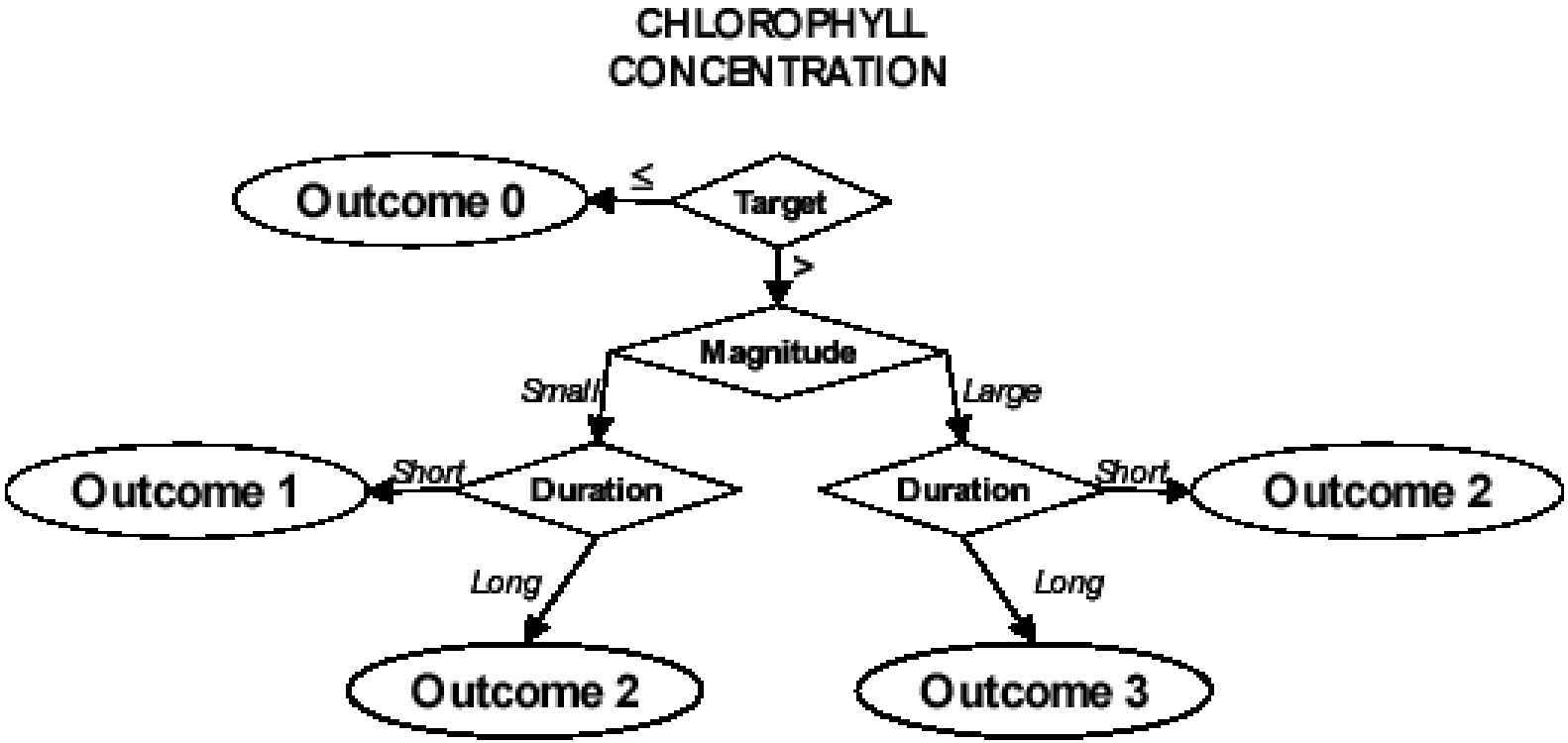


Figure 1. Monitoring and assessment decision framework for chlorophyll-*a* (from Janicki et al., 2000).

The "small" and "large" chlorophyll-a magnitudes for each bay segment are shown below.

CHL – Magnitudes Based on Mean Inter-Annual Standard Errors			
Bay Segment	**: Target (µg/L)**	**Small Magnitude (µg/L)**	**Large Magnitude (µg/L)**
Old Tampa Bay	: 8.5	8.9 – 9.3	> 9.3
Hillsborough Bay	: 13.2	14.1 – 15.0	> 15.0
Middle Tampa Bay	: 7.4	7.9 – 8.5	> 8.5
Lower Tampa Bay	: 4.6	4.8 – 5.1	> 5.1

Tampa Bay
Chlorophyll a Thresholds

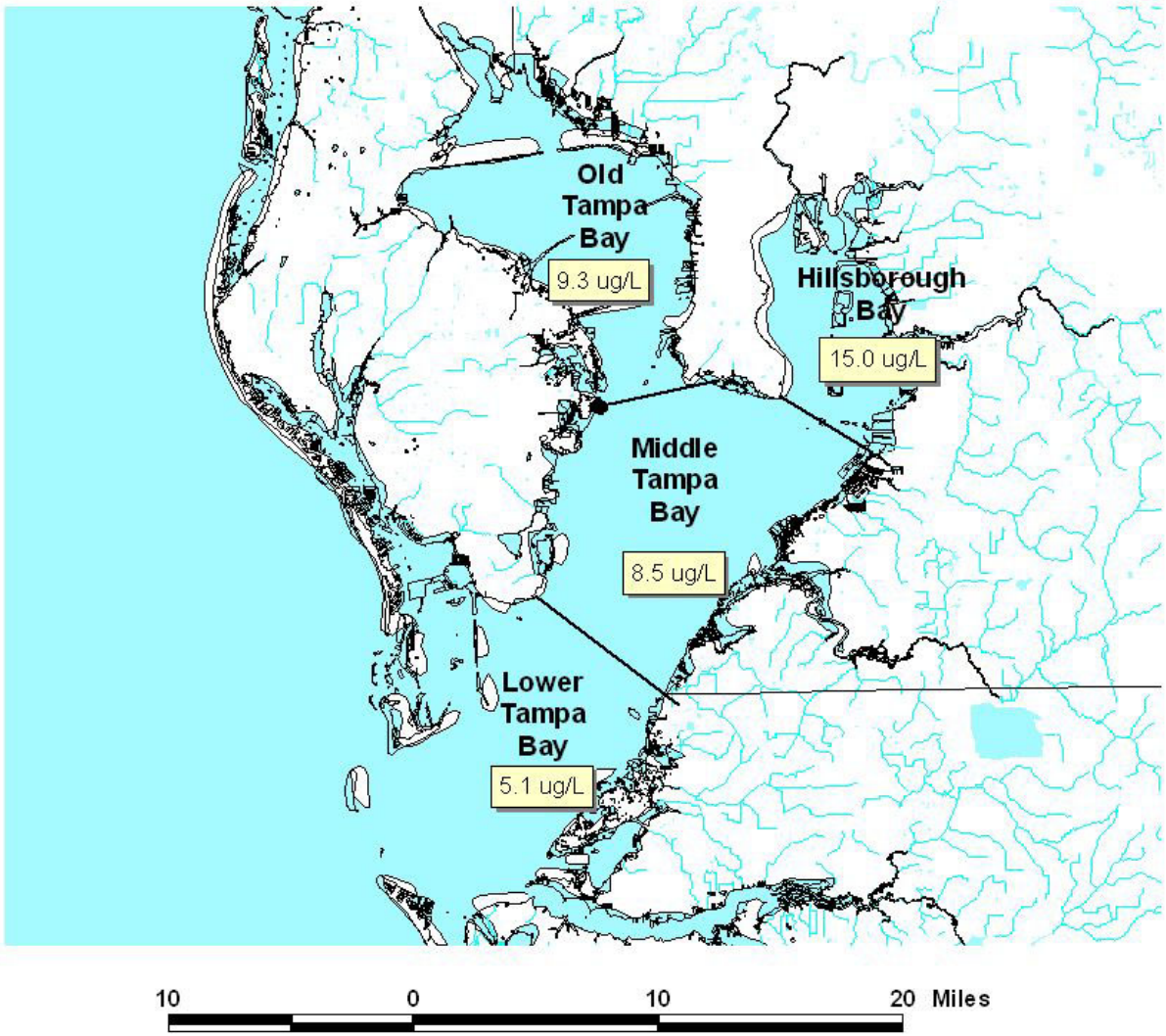


Table 1. Decision matrix identifying appropriate categories of management actions in response to various outcomes of the monitoring and assessment of chlorophyll-*a* and light attenuation data.

CHLOROPHYLL	LIGHT ATTENUATION			
↓	Outcome 0	Outcome 1	Outcome 2	Outcome 3
Outcome 0	*GREEN*	*YELLOW*	*YELLOW*	*YELLOW*
Outcome 1	*YELLOW*	*YELLOW*	*YELLOW*	*RED*
Outcome 2	*YELLOW*	*YELLOW*	*RED*	*RED*
Outcome 3	*YELLOW*	*RED*	*RED*	*RED*